

these shells, surviving the trip to California in 1911, may have gotten out of the oil can before and may have established a colony. No such colony has been observed and I have been living on this lot since 1898, gardening and maintaining a gardener all the time. I am sure that such a colony would have been observed before. Should one appear I will immediately notify THE NAUTILUS and recede from my position; but I have no hesitation in stating at this time that this particular snail (which the children immediately christened Rip Van Winkle), is one of the original lot which has recently broken through his epiphragm and started out to see the world. The shells were collected in June or July, 1911, so it seems almost beyond question that Rip, Jr., is now, March 27, 1934, over twenty-three years old.

Tryon (Struct. and Syst. Conchology, vol. 1, pp. 144-148), discusses the "Duration and Tenacity of Life" in mollusks. He mentions a specimen of *Helix veatchii* which lived six years without food and a "Desert-snail from Egypt" which evidently had closed itself in its shell with an epiphragm in the British Museum, but had emerged at various times during a period of four years. I think I can safely claim an all-time record for my specimen.

Incidentally, Dr. Pilsbry, (*loc. cit.*, 1930, pp. 359, 360), on more careful examination of the set of *Oxystyla* which I left in Philadelphia, decided that they represented a new species which he has described as *Oxystyla capax*. Will any of my exchangers who happen to see this note please rename their sets as above? They will be safe to note that they are topotypes from the original lot.

Point Loma, California, March 27, 1934.

JAMAICAN LAND SNAILS

BY H. BURRINGTON BAKER

Unfortunately, the earlier writers seldom gave accurate localities in their descriptions of Jamaican mollusks. For this reason, locality records of the species, incidentally collected during the summer of 1933 in a search for anatomical material, may be of

interest. Through the kindness of Dr. Pilsbry, I have been able to compare many of the species with C. B. Adams' original material, which now belongs to Amherst College.

Unless otherwise indicated, these records are based on animals collected alive; even fresh, dead shells of medium-sized and large species are untrustworthy evidence, because they are often transported several miles by hermit-crabs, which spread inland from the ocean and periodically return. My visit followed a severe drouth of eight months' duration, which made the collection of living, adult land-shells quite difficult, and included several torrential rains, which almost prevented the securing of fresh-water forms.

Because the names of present and former estates were often duplicated, even in the same parish, coordinates of my stations have been taken from the 1905 edition of the 1888 Public Works Department Map of Jamaica on a scale of 2.698 miles to the inch. These are given, in parentheses after each locality, as two sets of three figures, of which the first digit stands for the degree of longitude (*e.g.*, 7 means 77°) and the two following for the minutes; those in the second set indicate the latitude by the same method. These coordinates are followed by the estimated altitudes in hundreds of feet and my field station number.

Eastern Area [E], collected from Port Antonio and Manchioneal, August 19 to 31; [EBL] eastern Blue Mts., heavy rain-forest on older rocks (my only station off the limestone) between Millbank and Cuna Cuna Pass, St. Thomas (623, 800-2; 20-27; 37); [EEC] extreme east coast, brush and wooded ledges along left bank near mouth of Hector River, St. Thomas (615, 800; 0-1; 40); [EEJ] eastern end of John Crow Mts. near Portland-St. Thomas boundary, including (a) north-facing slopes and huge blocks on a summit near Greenfield (618, 800; 16-18; 39a) and (b) canyon-ravine to crest where big fan-palms and tree-ferns prevail (619, 800; 16-21); [EJ] John Crow Mts., Portland; [EJ1] canyon and falls of Jungle Creek, west of Ecclestown (620, 803; 10-18; 38); [EJ2] woods halfway between Sherwood Forest and Egg Hill (622, 808; 15-18; 33); [EJ3] near Nonesuch (625, 810; 13-18; 35); [EJF] coastal foot-hills behind reservoir for Port Antonio (626, 811; 6-10; 34); [EJG] west-facing slops, partially cultivated, near Good

Hope (627, 809; 5-8; 32); [ENF] ravine in coconut plantation and wooded coastal hills on Spring Garden, St. Margaret's Bay (632, 812; 3-5; 36)

Kingston, St. Andrews [K], August 5 to 15; [KC1] Long Mt. east of Mona and down Hope River gorge (643-46, 757-801; 0-5; 28); [KC2] from near springs to top of Long Mt., east of Rockfort Gardens (645, 758; 0-8; 27); [KCC] coastal St. Catherine, from north end of Port Henderson Hill, down west side to near Campeachy Gully (654, 756-7; 0-6; 31); [KF] 1.5 miles out of Constant Spring on east side of road to Stony Hill, along gutter of waterworks (647, 804; 4-5; 30); [KHS] Stony Hill, both west and east of P. O. (648, 805; 12-16; 26); [KHW] Bog Walk, St. Catherine (701, 806; 3-17; 29), including (a) left bank 1 mile below station, south-facing slopes to summit, and (b) right bank, ravine just above entrance to first railroad tunnel downstream from town.

Mandeville, Manchester [M], June 14 to July 5 and September 2 to 8; [ML1] precipitous, east-facing slopes above Peace River, Clarendon (726, 806; 20-25; 41); [ML2] summits above Porus and dry sink at Belretiro (728, 801; 17-18; 4); [MM1] around Williamsfield railroad station, cursory collecting (729, 804; 13; 8); [MM2] $\frac{1}{2}$ to $1\frac{1}{2}$ miles south of Wesleymount Church (729, 803; 16-20; 2); [MM3] near Newleigh Hotel, just east of Mandeville (732, 802; 21-23; 1), including (a) the gardens, (b) woods south of Williamsfield-Mandeville road and (c) woods north of hotel; [MM4] sink-holes and sharp hills, $\frac{1}{2}$ mile from Spurtree P. O. on direct road to Mandeville (735, 800; 22-25; 3); [MN] Somerset region; [MN1] 2 and $3\frac{1}{2}$ miles from Mandeville on road to Mile Gully (732, 803-4; 17-20; 6); [MN2] dryish hills and sink-hole, west of Marshall Pen and east of Mandeville-Somerset road (734, 804; 22-26; 7); [MN3] Somerset (735, 805; 21-25; 5), including (a) hills and sink-hole northeast of parochial road near south boundary, (b) higher hills and sink-holes west of road and (c) cliff-bases east of road and $\frac{1}{2}$ mile north of house.

Balaclava, St. Elizabeth [NM], July 27 to August 2: [NM1] $\frac{1}{4}$ mile southeast of station on Chewmagna (740, 810; 8-10; 21); [NM2] hills north of Rotten Gut, Manchester, including (a) Comfort Hill (737, 811; 5-15; 22a), (b) between Green Hill and Waterloo (737, 811-12; 7-20) and (c) cliffs along left bank of One Eye River on Oxford (738, 812; 5); [NMM] second growth on ridges south of Medina, Manchester (738, 807; 10-14; 24); [NMT] disturbed hills and cockpits between Troy and Coco River, Trelawney (738, 807; 20-25; 23); [NMV] Cockpit Country near Bullett Hall, St. Elizabeth (743, 814; 15-18; 25).

Montego Bay, St. James (V, including west edge of Cockpit Country), July 6 to 18: [VCM] east of town in (a) logwood plantations (757, 829; 4; 9a), (b) the gully, (c) hills near Rosemount (alt. 5-6) and (d) near Paradise (756, 830; 2-4); [VCN] north coast near Iron Shore (754, 832; 0-2; 14); [VF] ravine about one mile southeast of sharp curve in railroad south of Retirement River (756, 826; 2-4; 10); [VW1] east of Montpelier station to head of Anchovy Gully (756, 823; 4-12; 12); [VW2] hills 2 to 4 miles northeast of Catadupa station (753, 818; 16-21; 11); [VWS] dryish cockpit, $\frac{1}{4}$ mile west of Ipswich station, St. Elizabeth (751, 812; 7-8; 13).

Sav-la-Mar, Westmoreland [W], July 19 to 25: [WV] from lower source of Roaring River west to top of ridge and beyond (805, 818; 1-18; 17); [WSF] from Waterwheel up coastal ridge almost to summit (803, 812; 0-15; 18); [WC1] upper part of creek and base of ridges on Sweet Water (806, 814; 0-1; 20); [WC2] logwood plantations around Kingswood (809, 813; 0; 15); [WWF] foothills north of Retreat and valley beyond for about 2 miles west (817, 816; 1-6; 19); [WWC] dry woods in Negril Hills, southwest of Retreat almost to Crosbie (818, 813; 2-5; 16).

The following habitat terms are employed: deep-in-rocks (1 to 4 feet below surface); rock-bases (seldom seen climbing); ground (in and on dead leaves, etc.); weak climber (attaining about 3 ft. above ground during rains); fair climber (up to 10 ft.), good climber (higher yet); rock-faces (remaining there on clear days); subarboreal (in trees most of the time); arboreal (almost never seen on ground), including leaf-arboreal (minute species aestivating on under-sides) and trunk-arboreal (ditto on bark). The habitat notes are based on adults; juveniles usually show one degree more climbing propensity.

Lucidella (Poenia) adamsiana sublaevis, new subsp.

Similar to *adamsiana* but often slightly higher, without hairs at any stage of growth (in *adamsiana*, these are only absent $\frac{1}{4}$ whorl beyond embryonic shell); typically greenish white (colored animal) but also with orange brown form (like *adamsiana*); spirals lower on all whorls and becoming obsolete or obsolescent on last whorl, where fine growth threads are much more regular and more rounded. As in *adamsiana*, embryonic whorls $1\frac{1}{4}$ (sutural = about $\frac{3}{4}$ growth), relatively smooth, but with fine, weakly beaded growth wrinkles and blurred major spirals, which

increase in strength; horny plate of operculum radially striate. Alt. (of type male) 4.9 mm., maj. diam. 143 (7.0 mm.), alt. apert. 52 (2.5 mm.), diam. apert. 132 (3.3 mm.), with $4\frac{1}{8}$ post-embryonic whorls.

No actual intergradation in pubescence has been found, but the hairs of *adamsiana* are deciduous and even living specimens may have lost the hair-scars over part of their surface; also one albino paratype of *sublaevis* has its weak basal spirals irregularly strengthened into brownish spots. Type locality (Acad. Nat. Sci. Philadelphia no. 162731): MM3b.

Stoastomops adamsi, new sp. [*Helicina tenuis* C.B.A. (Sept., 1849, Cont. Conch. 1: 14), *Trochatella tenuis* (op. cit.: 16) not *H. tenuis* Pfr. (April, 1849)].

Like *S. walkeri* H.B.B., from Bonaire, D. W. I., but imperforate, although often with deep groove behind columella, with penultimate whorl obtusely angulate above distinct suture and last whorl more convex although scarcely angulate; spiral ridgelets more widely spaced above and becoming weaker on last whorl (6-7 above, 28-29 below periphery); operculum almost plane except for decided thickening of lower $\frac{3}{4}$ of parietal edge; radula with cusps of A-lateral larger than those of B, with 21 marginals, of which 5 are unicuspid, 1 bicuspid and 4 tricuspid. Alt. (of type female) 2.22 mm., maj. diam. 114 (2.52 mm.), alt. apert. 44 (.97 mm.), diam. apert. 133 (1.29 mm.); opercular width (from another female) .82 mm., length 139 (1.13 mm.).

Type locality (ANSP. 162861): on outer surfaces of quite exposed rocks, sometimes one per square cm., halfway up Long Mountain (KC2). Because Adams preferred *T. tenuis* on a later page of the same paper, I believe his name is valid but Dr. Pilsbry disagrees.

Eutrochatella pulchella cavearum, new subspecies.

As small or smaller than *scitula* (Wood), with peripheral carina quite sharp and continuous (instead of undulate or broken), with 5 spirals above and 15 visible below, without reddish markings (or with light, orange-tinted band below peripheral carina). Alt. (of type male) 7.5 mm., maj. diam. 110 (8.2 mm.), min. diam. 90 (6.7 mm.), with $1\frac{1}{4}$ (sutural) embryonic and $5\frac{1}{4}$ post-embryonic whorls. Type locality (ANSP. 162732): NM2c.

E. pulchella cathartensis, new subspecies.

Nearest *multicarinata* (C.B.A.), but usually smaller with all spirals (9 above, 16 below peripheral) accentuated and somewhat serrate; peripheral carina much stronger, produced on antepenult whorl into 17 serrations which overlap suture, on penult into 24 even larger ones but on last whorl becoming more nearly uniform; with three, wide, orange-red bands, of which lower two are sometimes (in type) confluent; peristome thickened internally so that the face of its reflection is concave and almost in plane of aperture, angulate at peripheral carina. Alt. (of type male) 7.1 mm., maj. diam. 120 (8.5 mm.), min. diam. 91 (6.5 mm.), with $1\frac{1}{4}$ (sutural) and $4\frac{1}{4}$ post-embryonic whorls.

Type locality (ANSP. 162733): on drier, chalky underside of rocks in canyon-like gully, Portland (EEJb). This subspecies approaches *E. josephinae* (C.B.A.), but is a smaller, higher shell with the carinal serrations much less prominent on its last whorl.

E. nobilis retreatensis, new subspecies.

Females averaging about as large as males of *nobilis*, subangular (instead of evenly rounded), with spiral threads (10 above and probably 35 below although only first 10 are fairly distinct) becoming stronger and more discrete towards periphery, on which 3 spirals coalesce intermittently into about 16, oblong, white calli; two orange-red bands (absent in *nobilis*) represented by a series of 6 to 8 big, oblong blotches above and another row of about 12 smaller ones between peripheral calli, but not visible on lip, which is narrowly reflected (like in *nobilis*). Alt. (of type male) 13.7 mm., maj. diam. 110 (15.1 mm.), min. diam. 95 (13.1 mm.), with $1\frac{1}{4}$ (sutural) embryonic and $5\frac{3}{4}$ post-embryonic whorls.

Type locality (ANSP. 162734): WWF. This race slightly approaches the carinate *E. chittyana* (Pfr.).

Helicina neritella Lam., subarboreal, young shells with short, irregularly spaced, epidermal ridges in a spiral direction, including typical race [EBL, EEC, EEJ, EJ, ENF, KH] and race *reducta* A. J. Wagn. [KHW, ML2, MM1-3, NM2, NMV]); subsp. *diplocheila* A. J. Wagn. + *angulata* C.B.A., subarboreal [VCM, VW1, WC2, WCC]; *H. (Ampliata) jamaicensis* Swby. + *H. ampliata fuscocallosa* A. J. Wagn., good climber [ML1, MM3, MN, NM, VW2, WV, WC1, WWF]; with close spirals of ex-

tremely short hairs]. Females usually larger than males in both species.

Alcadia major (Gray), rock-bases, including typical [ML1-fresh, MN2, 3, NMM, NM2] and approaching *gossei* [NMV]; subsp. *gossei* (Pfr.) [VF-subfossil, VW2, WV-dead]; *A. albo-labris* (C.B.A.), fair tree-climber [ML1, MM3]. Both species develop very short, subequal, deciduous, epidermal hairs, which form close rows (more distant in *albolabris*), both spirally and along growth-lines. In all the Jamaican species of *Alcadia*, the females are usually larger.

A. (Idesa-like) megastoma (C.B.A.), fair tree-climber [EJ2, 3, ENF; smooth and shining; red tinting usually apical, very variable in extent]; *A. affinis* (C.B.A.), big subsp. [EBL-fresh; = *gloynei* (Bld.) ?]; *A. solitaria* (C.B.A.) [KHWA-fresh]; *A. dubiosa* (C.B.A.), ground, incl. typical [WWC (incl. albino shell), WWF, WC2; epidermis with low, wavy, spiral ridges] and appr. *intermedia* (C.B.A.) [VF-fresh].

A. (Palliated) brownii (Gray) [VF-dead]; subsp. *palliated* (C.B.A.), fair climber [MM3, 4, MN, VW1, 2]; subsp. *labiosa* (C.B.A.) [NM]; *A. microstoma* (C.B.A.), fair climber [NMV; with whitish band below suture and hairs longer than preceding]; *A. hollandi* (C.B.A.), weak climber, mainly ground [ML1, MM4, MN1, 3, NMM, NM2a (some yellowish with pink apices), NMV, VW2]. Epidermal hairs in this group similar to those in typical but with two rows of long hairs above and below notch and its groove.

A. (Palliated) pusilla (C.B.A.), mainly ground [MN3; very long hairs absent; middle-sized stout and widely spaced except in row below notch]; *A. macilenta* (C.B.A.), ground [EBL, EEJ; major hairs conspicuous]; *A. consanguinea* (C.B.A.), fair climber [WSF; with much shorter hairs than next]; *A. hirsuta* (C.B.A.), fair climber [EEJ, EJ1-3, EJF; major hairs very long and heavy]. Epidermal hairs in this group longer in each 2nd or 3rd spiral row and usually still longer in 7 rows; a subsutural row, 2 at periphery, 2 on umbilical side and 2 above and below notch and its groove.

Lucidella aureola (Fér.), subarboreal, males usually smaller,

incl. typical race with more widely spaced spirals and commonly of typical greenish-yellow color-form [EBL, EEC (often dwarfed, mainly greenish, EEJ (mainly greenish), EJ, ENF, KC1, KF, KH], Mandeville race with close spirals, rarely greenish [ML, MM3, 4, MN3 (yellow), NMM, WWF] and dwarf race [VCN, WV (some greenish), WC1, WWF]; subsp. *montegoensis* Br. [VCM; red and reddish-green]; *L. granulosa* C.B.A., sub-arboreal, males smaller [MM2-4, MN]; subsp. *undulata* Pfr., incl. typical carinate race [NM2, NMV] and approaching *interrupta* Simps. [VWS, VW1, 2; carinate but radial undulations progressively weaker; also approaching uncomfortably close to *montegoensis*]; *L. inaequalis* Pfr. good climber, males smaller [WWC; yellowish and red color-forms].

L. (Poenia) depressa (Gray), ground, males and females subequal [KF, KHW; hairs of medium length, quite distant, arranged in rows parallel both to growth and spiral lines; incl. one albino]; subsp. *valida* (C.B.A.), ground [EEJ, EJ1, 3; hairs longer; shell more globose, bright reddish; scrobiculation prominent]; *L. coronula* (Pfr.), ground, males larger [MN3b, c; hairs very long and most widely spaced]; *L. adamsiana* (Pfr.), ground, females larger, including typical [MM4, MN, NMM, NM2a, b, NMV, VF-fresh, VW1, 2, VWS; hairs shortest and most closely spaced along spirals] and dwarf coastal form [KHS, WC1, WWF]; subsp. *sublaevis* H.B.B., ground, males and females subequal, incl. typical albino [MN3b, c] and colored forms [MM2, 3b, c, NM2b, NMT].

L. (Perenna) lineata (C.B.A.), ground, males smaller, including typical race with more widely spaced, stronger spirals [EEJ, EJ2, 3, EJF; what I take to be Adams' types come from St. Davids] and Mandeville race with more closely spaced, finer spirals [MM3c, MN1, 3a]; *L. persculpta* Pils. & Br., ground, males smaller, incl. typical [VCMb-d; with epidermal ridges surmounting major spirals] and probably distinct subsp. [WWF; one small, more elevated shell, with many basal spirals]; *L. foxi* Pils. [EEC, EJF, ENF].

The genus *Fadyenia* (= *Stoastoma* minus *Stoastoma* s.s.) has a radula with comb-laterals and without unicuspid marginals; it

is, I suspect, more closely related to *Lucidella* and *Ceratodiscus* than to *Stoastoma* and *Stoastomops*. The "species" have been grossly overdescribed; identification of Chitty's names must await comparison of his types (too often "unique") with series of fresh, unworn shells.

Fadyenia (Lewisia) agassiziana (?) *adamsiana* (Ch.), rock-bases [VCMb, c, WCC-dead; compared with worn shells probably from Chitty; calcareous operculum with very large inner tongue like in (subfossil) type of *F. philippiana* (C.B.A.); largest shell with maj. diam. 2.8 mm. (type of *agassiziana* not seen); tongue-shaped expansion of umbilical lamella, which is very fragile and easily broken away, quite variable, sometimes almost horizontal but usually curved upwards and rarely almost touching penult whorl (broken away from types of *philippiana* but certainly never soldered in paratype; third shell a *Proserpinula*!); fresh shells rather clean, 6 ribs with epidermal expansions like in *Lucidella persculpta*].

F. (Blandia) gouldiana (C.B.A.), rock-bases [MN3c, young; 9 ribs with epidermal expansions]; *F. hollandiana* (C.B.A.), paedogenetoid subspecies, rock-faces [VCMb, c, VF; as small as maj. diam. 1.3 mm. with $\frac{1}{2}$ whorl less; may be *B. hilliana* Ch. and *W. bensoniana* Ch.]; *F. blandiana* (C.B.A.), rock-faces, incl. fairly typical [KHS, KHW; Adams' types (2) seen] and one larger shell [KHW-dead; maj. diam. 2 mm., with $\frac{1}{2}$ more whorl, 5 + 32 spirals and last $\frac{1}{8}$ whorl solute, which makes a very depressed shell]. Typical *Wilkinsonaea* has an operculum approaching that of *Lewisia*, but *Blandia*, the 2nd group of *Wilkinsonaea* and *Petitia* (radula unknown) are often not even specifically separable. The subdiscoid to globose-subdiscoid shells keep relatively clean and develop 5 (typical) to 9, brownish, epidermal expansions on major spirals, which in worn shells (*Blandia* s.s.) may be scarcely stronger than the interstitials.

A second paper of this series will appear in the near future.